

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/016940

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 2-4, 7-11, 14-16, 18-22, 24-52 as originally filed/furnished
- pages* 1, 5, 6, 12, 13, 17, 23 received by this Authority on 10.05.2005
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. 2-34 as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1 received by this Authority on 10.05.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets 1/1 as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1.	Statement		
	Novelty (N)	Claims <u>1-34</u>	YES
		Claims _____	NO
	Inventive step (IS)	Claims <u>1-34</u>	YES
		Claims _____	NO
	Industrial applicability (IA)	Claims <u>1-34</u>	YES
		Claims _____	NO
2.	Citations and explanations (Rule 70.7)		
	<p>Document 1: JP 2001-151895 A (Matsumoto Yushi Seiyaku Co., Ltd.), 05 June 2001</p> <p>Document 2: EP 1288727 A1 (Kureha Kagaku Kogyo Kabushiki Kaisha), 05 March 2003</p> <p>Document 3: JP 11-269343 A (Inoac Corp.), 05 October 1999</p> <p>Claims 1 to 10</p> <p>The invention set forth in claims 1 to 10 involves an inventive step in relation to document 1 cited in the international search report.</p> <p>Document 1 does not disclose the feature wherein a gaseous fluid that contains thermally expandable microspheres is sprayed from a dispersion nozzle so that the thermally expandable microspheres are dispersed in a stream of hot air, which causes the dispersed thermally expandable microspheres to expand by heating said thermally expandable microspheres to a temperature higher than the expansion initiation temperature thereof. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that it is possible to produce thermally expanded microparticles that exhibit little change in the variation coefficient of the particle size</p>		

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

distribution during expansion and have an extremely low content of agglomerated particles or unexpanded thermally expandable microspheres as a result of the feature in question.

Claims 11 to 20

The invention set forth in claims 11 to 20 involves an inventive step in relation to document 1 cited in the international search report.

Document 1 does not disclose the feature wherein the thermally expanded microspheres comprise 5% or less by weight of agglomerated particles and 5% or less by weight of microspheres that have a true specific gravity of 0.79 g/cc or higher at a temperature of 25°C. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that the thermally expanded microspheres exhibit little change in the variation coefficient of the particle size distribution during expansion and have an extremely low content of agglomerated particles or unexpanded thermally expandable microspheres and as a result of the feature in question.

Claims 21 to 29

The invention set forth in claims 21 to 29 involves an inventive step in relation to document 1 cited in the international search report.

Document 1 does not disclose the feature wherein the thermally expandable microspheres exhibit an expansion factor of over 100% at the maximum expansion temperature, comprise 5% by weight or less of agglomerated microspheres, and comprise 5% by weight or

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	<p>less of microspheres and have a true specific gravity of 0.79 g/cc or higher at a temperature of 25°C. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that it is difficult to destroy the thermally expandable microspheres by means of an external force as a result of the feature in question.</p> <p>Claims 30 and 31</p> <p>The inventions set forth in claims 30 and 31 involve an inventive step in relation to document 1 cited in the international search report.</p> <p>Document 1 does not disclose hollow compositions or hollow molded articles that contain the abovementioned thermally expanded microspheres and/or the abovementioned thermally expandable microspheres. On the other hand, the inventions set forth in the abovementioned claims of the present application exhibit an advantageous effect in that the inventions do not undergo cure shrinkage during the molding process or thermosetting over time as a result of the feature in question.</p> <p>Claims 32 to 34</p> <p>The inventions set forth in claims 32 to 34 involve an inventive step in relation to document 1 cited in the international search report.</p> <p>Document 1 does not disclose the feature wherein the thermally expandable microspheres are configured from an outer shell, which comprises a thermoplastic resin obtained by polymerizing a monomer mixture that contains 20 to 80% by weight of a nitrile-based monomer and 80 to 20% by weight of a carboxyl group-containing monomer as</p>

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essential constituents, and a blowing agent, which comprises a fluorinated compound with a carbon number of 2 to 10 that has an ether structure and does not include chlorine atoms or bromine atoms. On the other hand, the invention set forth in the abovementioned claims of the present application exhibits an advantageous effect in that the abovementioned thermally expandable microspheres are capable of serving as the starting material for the abovementioned thermally expanded microspheres and the abovementioned thermally expandable microspheres as a result of the feature in question.

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Box No. VI

Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 2004/74396 A1	02.09.2004	23.02.2004	24.02.2003
[E, A]			

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)
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